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EDITOR

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CANADA

MEDICAL RECORD

JULY, 1903.

Original Communications.

X-RAYS AS A THERAPEUTIC AGENT.

By W. H. DALPE, B.A., M.D.

Being a series of three lectures delivered to the students of the Class in Pharmacology and Therapeutics, University of Bishop's College, Faculty of Medicine, Montreal, March, 1903.

LECTURE III.—*Continued.*

GENTLEMEN, if one could place a reliance on the extraordinary results reported in any or all medical reviews, we would possess, without doubt, in "raying," the most wonderful therapeutic agent the world has ever seen. But for the present, it behooves us to use moderation in our estimation of this method of treatment for several reasons. Firstly, because many cures are prematurely reported; secondly, because many who dabble in this method, through lack of proper knowledge, lower the method in the eyes of both profession and laity.

The use of X-rays as a curative agent for lupus and a number of other diseases of the tegument dates from the experiences of Freund and Schiff, 1897-1898.

Action of "raying" on the skin.—It is claimed that there is no dissimilar action on the skin in health and disease. This statement has only an appearance of truth, for although the general reaction in health and in disease is somewhat analogous, yet the health of the part will greatly modify it.

After a certain time, always variable with each case, the cutaneous surface takes on a yellow tinge, which may be due to a centrifugal displacement of the pigment around the part exposed; the pigment at times becomes

aggregated in spots resembling freckles. This discoloration might, by the unexperienced, be taken for lupus spots, both new and old, but is distinguished from these by not disappearing under glass pressure. It differs with individuals, and is a favourable sign. It is common to all forms of light treatment. X-rays, in short exposures, tends to make the skin rough, stiff and dry. Hopkins, of Brooklyn, in his routine treatment, only produces a blush of the epidermics, and itching sensation tending to return to the normal in 48 hrs. But on further exposure, the blush on the epidermis intensifies and takes on an even darker colour, and the part may appear scalded or roasted. Some degree of oedema is always present, which determines a sensation of fullness and weight in the part, most marked in warm weather, and when it is dependent.

The sense of touch is lessened *pari passu* with the sense of pain (Linnaeus H. Prince), and in any case of injury to the skin, the primary injury is to the nerves controlling its nutrition (E. A. Codman, Boston).

The action of the X-rays is cumulative on the skin in most cases, although many subjects will acquire a resistance to it well nigh surprising. Speaking of the general action of the X-rays, Chas. Lester Leonard says it is both stimulant and alterative. Normal tissues are stimulated to greater activity by a stimulus which injures gross embryonic tissue, malignant tissue and all tissue of low vitality. Schiff, in speaking of the action of the X-rays on lupus, says that the inflammatory reaction which it sets up is injurious to the micro-organic cause of the disease; Albers Schonberg considers inflammation and dermatitis as unnecessary. The desirability of obtaining a "reaction" has then thrown the X-ray therapists into two camps; one having Albers Schonberg and Hopkins as leaders and exponents, claiming that healing can be obtained without a dermatitis; whilst another and more numerous school looks upon hyperaemia and inflammation as the *sine qua non* of the reparative process. Gentlemen, what did your professor of pathology teach on the question of inflammation in relation to healing? Did he consider it necessary and helpful, or not?

Gentlemen, personally, I consider that we cannot adhere to a hard and fast rule, and that each case must be treated on its own merits, although speaking generally, the best and most lasting results follow an inflammatory reaction. Chas. Lester Leonard, of Philadelphia, thinks that the so-called harmful effects of "raying" in malignant

conditions are due to too weak a dosage. I consider that lupus exedens requires a much more vigorous treatment than lupus hypertrophicus; whilst, if you would cure epithelioma, you must produce a most decided inflammation of the diseased tissue and the surrounding healthy skin.

The *alterative* action of the rays is more called for in certain cases where the diseased condition is not advancing rapidly, and in the whole series of hopeless cases where a palliative effect only is desired; here, the rays may be used for their sedative effect. According to Leonard, the destruction and liquefaction of a large mass of malignant tissue would flood the system already depressed by the presence of the disease, with an amount of toxin too great to be absorbed, thereby favouring auto-intoxication. An increase in vitality and body weight and general metabolism is an indication of the adequate dosage of X-rays, whilst the reverse indicates either a deficiency or an excess of irradiation.

In all debilitated persons, either from prolonged disease, or advanced age, the question of dosage acquires a fresh element of dubiousness. The adequate degree of irradiation must fall somewhere between the two distinct metabolisms, the general (systematic), and the local. The line of cleavage between them may be indistinct, as it were, or altogether lost, so that you cannot estimate exactly what amount of irradiation you require with the end in view, and you are left with tissues easily injured by your treatment, and repaired with the greatest amount of difficulty. This is probably what constitutes in great part, individual susceptibility, and different as it is, there is no well-known or reliable method of prognosticating what it will be.

Cumulative as the light effect is generally, in a few the skin may show an acquired resistance. In others where a reaction has once been obtained, a second or third reaction can be obtained with increased facility. Among many, two of my cases exemplified this. One, an old man of 80, with low vitality, suffering from a facial rodent ulcer, showed a remarkable resistance to raying. A first reaction was obtained, but, when a second was desired later on, no safe X-radiation could evoke it. A second case showed increased susceptibility in a remarkable degree. The patient was a young girl of 18, of stunted growth, with tubercular caries of the anterior portion of the os calcis of the left foot. After an apparent cure by the X-rays, a recurrence having taken place, the X-rays

were found to set up a most violent reaction in two sittings, and the wound thereafter showed little disposition of repair. In this case, the cause lay also in a low state of vitality, much more than in the light.

The degree of penetration of the rays is sufficient to enable us to see through the body, but their therapeutic influence falls very short of their full penetration. Schiff has shown that the light must be applied not to the healthy side but directly over the diseased side. Edwards looks upon this fact as a proof that the therapeutic effect depends not only on the X-rays, else it would be felt through the whole thickness of the part, but on some associated electrical current. Kummell and Jankau, for somewhat similar reasons, have advanced their electrochemical theory.

Barthelemy's tropho-neurotic theory would seem to gain support by Pfahler's experiment, which consisted in covering half of a tumour with tinfoil or lead, and after a series of 8 exposures, the tumour being removed, showed degenerative changes in its unprotected section. Likewise he found that glands outside of the range of exposure remained cancerous when the parent growth had become fatty under exposures. It is true, however, that such a degeneration may occur spontaneously.

The method of comparing the efficiency or the quality of different tubes and the diverse forms of exciting apparatus, fails to convince every one, owing to discrepancies in the results obtained by different men with apparently identical apparatus. Most radiographers prefer the so-called soft tubes and the static machine as the source of electrical energy. Hopkins has discarded the coil owing to either the bad or unsatisfactory results he obtained with it. Codman, in his admirable summary of the subject of X-ray burns, says that the static machine is less likely than the coil to produce them. In regard to tubes, I prefer a good Mueller self-regulating tube; others look upon all regulating tubes as no wise superior for routine treatment.

Leonard, speaking of the varied effects of X-radiations, says: "The variation is one in degree and not in nature and depends (1), on the nature of the tumour and its host, and (2), on the amount of the alterative agent employed, both of which are difficult to measure in different cases and with different apparatus. The quality and quantity of the rays vary with the efficiency of the apparatus and the expertness of the operator. The degree of change produced varies widely with the

amount and the frequency of the dosage. The best results are achieved through the replacing, as a retrograde metamorphosis of the malignant tissue by fibrous or adipose tissue. More rapid results, but possibly more dangerous, can be produced by the sloughing and necrosis of the pathological tissue.

Opinions differ widely as to the length of each séance and the proximity of the tube to the part to be treated. Some will tolerate a fifteen minutes' exposure at twenty-five inches; but five min. at fifteen inch distance will produce redness in another (Hopkins). Experience, knowledge and judgment are all necessary in order to treat each case according to its special needs. Some begin by one or two short sittings of about ten minutes, in order to test the susceptibility of the patient, and then the length of the sittings is gradually increased to half an hour, which Albers-Schonberg puts down as the limit. Freund thinks we should pause two or three weeks after the second sitting, which should not exceed five minutes. Willams, of Boston, suggests an initial sitting of ten minutes, repeated once in a week, after which he advises waiting for about two weeks for effects, when the séances are resumed, but interrupted on the first sign of irritation.

In treating sores of small dimensions, and removed from important and delicate organs, many radiographers, like Hall-Edwards, have no hesitation in causing an X-ray burn of the 2nd or 3rd degree, by an exposure of fifteen to twenty minutes, the tube being at a distance of one to two inches from the part to be treated. Of course extra precaution is necessary in protecting the surrounding tissue, by more than one thickness of lead foil. The resultant ulcer heals slowly, taking sometimes months, according to some authority. My method of dealing with them, by Reverdinizing the edges, has always produced rapid and very satisfactory closure of the resultant sore.

Codman has elucidated the subject of X-ray burns from a tabulation of reported cases, but he finds that their frequency has been exaggerated, only 171 cases being described; on these one-third were in X-ray workers themselves, and less than one-half were of a serious nature. He concludes that not more than one in a thousand patients has been injured in the past five years, and in the last year not one in ten times that number. The cause, according to him, is not definitely known. It is some form of energy closely allied to the photographically active X-ray, and radiates with it from the platinum terminal.

No burn is produced by an exposure equal to or less than five minutes at ten in.; soft tubes produce more intense effect on tissues than hard ones. In case of injury, the time of appearance is from a few minutes to three weeks; very rarely more; one-third having appeared before the fourth day, and one-half before the ninth day.

This may serve as a guide for the uninitiated. It is interesting to note, in the presence of Codman's guarded opinion as to the cause of X-ray burns, some of the views of noted radiographers and physicists, most of whom consider it different from the X-rays, and only incidentally associated with it: thus Rollins produced a dissociation of these by causing a burn with tubes of such hardness that no light would go through; Trowbridge was able to produce a dermatitis by brush discharge. However, some would think that the light here is in a fine state of division, and not generated in vacuo. Tesla, Elihu Thomson, and Stine, all incline to some chemical action as the causative factor of burns, the former considers it as related to the ozone and the nitrous acid generated by the light; the latter thinks it is due solely to the ultra-violet rays or the so-called chemical rays. But Hopkins considers the ultra-violet rays are more constructive, whilst he thinks the X-rays are more destructive, and on this basis he uses a combination of both in the treatment of malignant conditions of the skin.

Radium has been used for the same end as the X-rays, and, like these, it is capable of producing burns in healthy as well as in morbid tissues. Their action is not dissimilar, and it is not unreasonable to expect them to become rivals. Already reports come to us from the Charing Cross hospital, where Davidson operated a cure on a case of superficial erosive cancer of the nose in six weeks' time, by exposures averaging fifteen minutes each and once week. It is claimed that previous treatment by the X-rays had been unsuccessful.

There are conditions which militate also in favour of the X-rays, and against the Finsen method.

(*a*) Extensive conditions in rapid process of extension. But here it may be deemed necessary to expose only a part of the sore, usually beginning at the edge, lest the patient find it difficult to bear a too active and extensive stimulation.

(*b*) Difficulties of position, as near the eye or about the mouth or other orifices of the body where compression becomes difficult or impossible.

(*c*) Those which hinder the penetration of the light and therefore interfere with good reaction, as pigmentation, cheloid, excessive vascularity, or deep seated diseases.

The preparation of the patient is a thing that seldom receives sufficient attention. In the construction of the masks or shields we must use some material as nearly opaque as possible to the X-rays. Sheet-lead is commonly employed and has many advantages: it is pliable and readily adapts itself to the contour of the part to be treated, but it is a conductor of electrical current and unless the tube be some distance away from the patient the lead becomes charged with electrical current and a series of small shocks are felt in any place where the skin and the lead are in close contact. In order to prevent this, rubber tissue, blotting paper, or cloth may be interposed. A nice shield may be made by 4 or 5 thicknesses of tinfoil pasted together over blotting paper. For facial conditions very convenient protectors may be made from ordinary buffoon masks, painted at least twice over with thick white lead paint and inlaid with strips of blotting paper. The necessary incisions in them can be made with a sharp knife or scissors or punch and mallet; these must be of the shape of the part to be treated. It has been the habit of radiographers to recommend that the incisions be made from a half to one inch larger in diameter than the sore. The tissues will be influenced somewhat beyond the limits of irradiations so that in conditions of not too great morbidity, infiltrations not being likely to extend far into apparently healthy tissues, it will not be necessary to expose them. On the other hand there are other conditions where irradiations have to be given a wide berth, either by enlarging the aperture in the shield or mask or by dispensing with them altogether, as in diffused eczemata and psoriasis, in which case a certain amount of risk has to be run. Grounded aluminum shields have failed to protect always, and are being discarded.

The radiographer runs as much risk as the patient, and often more in that he is exposed much more frequently; therefore many get some degree of dermatitis, usually on the hand; cooling lotions and nearly all fatty bodies are useful in both its prevention and its cure. Radiographers should therefore avoid needless exposures, or protect their hands by rubber gloves as used by surgeons. Williams recommends enclosing the tube in a wooden box, with a

diaphragmatic aperture for the light, and which is painted carefully on the outside by white lead paint.

I enclose my tubes in a copper globe made in two sections, and easily adjusted to each other; opposite the anticathode there is a circular aperture one and a half inches in diameter, about whose rim brass specula (usually about six inches in length) are fastened. Their diameter varies only at the distal end. This is used independently of the shields or for such cavities of the body as are within reach. Pennington is using a combined tube shield and speculum, which are analogous except in that his are provided with handles.

Caldwell's tube for the treatment of cavities has its anode placed at the distal end of a tubular prolongation, which could thus be inserted easily into the rectum, vagina, etc., through any speculum of metal or vulcanite. The difficulty in the construction of this tube (Traux Green Co.) has somewhat marred its efficiency.

Lupus has received the lion's share of the attention of phototherapists and radiographers, and it has given them results well calculated to elate them. Under the X-radiance (or the chemical rays) there occurs a superficial destruction of the tubercle bacilli and subcutaneously a harmless inflammation (Gocht) or hyperaemia (Albers-Schonberg) favouring repair. All careful experimenters agree with Kummell in finding that the first sign of repair begins by the cleansing of the ulcer; from this on, cicatrization proceeds with the drying of the scabs which tend to fall off, whilst the skin round about desquamates, each new desquamation disclosing a new, paler, and healthier skin below.

If your reaction has been more violent, you get a general, phlogistic effect (Schiff), usually resembling burns in the second or third degree. Necessarily the process of repair will be longer, and after the resultant ulcer has become clean, skin-grafting is advantageously resorted to. It is not advisable to wait until nature has well nigh lost its reparative power, but it is best to skin-graft early.

The cure of lupus has been the rule, and among the few failures that I have had, I must place luetic conditions, which yielded readily to the action of the iodides or of the iodides and the light. Whenever a case of lupus does not yield readily to the light, or when the light cure does not seem to be permanent, I bethink myself of the specific treatment, and very seldom do I meet with disappointment.

Having so well succeeded with lupus, we looked for

fresh fields of investigation. The closely allied condition of scrofuloderma was next attacked; the results were most gratifying indeed. Several cases have been cured in my hands, some without any irritation and without scarring, but a few with both. Tuberculous adenitis is likewise amenable to this beneficient treatment, and a young boy after bi-weekly sittings for three months was cured of a large sloughing chain of glands on the right side of face and neck.

Tuberculous joints, when softening has not advanced too far, will give good results under the combined dry hot air and X-ray therapy. I have two cures from such procedures after about six months' treatment, giving one to two treatments a week, and a few others are still under treatment and doing well. A few had not the perseverance to continue, and are in the *statu quo morbidis* and one case, after an apparent cure, had a recurrence which did not yield readily to the treatment. Since the published results of Werner, medical literature has not been without evidences of the potent influence of the X-rays in all forms of articular conditions including the tubercular, and I feel confident that we would have still more, were they used more systematically.

Hypertrichosis. The X-rays are also used for cosmetic effects in this most vexatious and fairly common condition, specially among the fair sex. Some of the German experimenters cumulate upon the skin to be treated a series of slight inflammations whereby they produce a degeneration of the papillae and thus bring about lasting (?) alopecia, without noteworthy reaction Success, Williams says, is more easily obtained in the young than in the middle-aged; vertical rays are more effective than those which fall obliquely; fully developed hair comes off more easily than lanugo hair, and the skin of blondes reacts more quickly and vehemently than that of darker complexion.

I have had notable exceptions in my experience. I may add that I never promise a permanent removal; but we can hold out the hope of considerable mitigation of hirsuteness after one to three removals of the hair. In my routine treatment of other conditions, I could always depend upon the falling off of the hair of the part as a sign of the beneficial influence of the rays at *brève echéance.*

Sycosis, and Favus. My experience is limited to the first and I can vouch for the splendid results which the X-rays give us in its treatment. I have made one cure in three sittings of ten minutes at six inches at three of

four days' interval. A good deal of redness became manifest, the beard fell off and the sycosis disappeared with it. Another case treated more leniently gave me an apparent cure, and I had to repeat the treatment on several occasions since to check the re-awakening of the dormant tricophyta.

Eczema. There is, in my opinion, no disease in which you can expect quicker and better results than in acute eczema. I have had for over one year unvarying good results in its treatment. On account of the extent of the disease and its situation, I have not as a rule employed a shield, and some amount of risk is being run. Usually one sitting will relieve the intolerable itchiness; rarely more than three are necessary; the exudate dries from the first and after a comparatively brief desquamative period a healthy skin once more gladdens the heart of both patient and physician. I must confess that, emboldened by success, I have in one or two cases got reactions beyond what was intended or required, but not of a grave nature, and always followed by cure.

With the more dry varieties of eczema and psoriasis, I have little practical experience, but many write approvingly of the treatment for both, only a little more patience is required to obtain good results. Pfahler reported one case of cure of psoriasis with his method of treatment, which consisted in passing the X-rays over all the affected portions of the body. Cure resulted in three weeks without loss of hair.

Recurrence of the eczema sometimes occur, but it yields usually more kindly than at first and after treatment salves prove beneficial when they did not before.

But it has been in the treatment of ulcus rodens, precancerous keratosis, and epitheliomata that radiographers have concentrated their efforts, since the demonstration of the cure of lupus beyond all doubt. Their treatment does not vary materially from that of lupus except that a more vigorous reaction is necessary. Results naturally depend upon the depth of the affection. A caustic action is considered necessary; Williams claims, however, that all the results may be brought about without pain, inconvenience or a burn. We can consider the results as usually uniformly good in early and uncomplicated cases, even after operative measures have failed. But when, as Newcomet says, the disease has advanced so far that the patient suffers from exhaustion, little hope can be entertained for that person's recovery, yet temporary improvement sometimes occurs. Newcomet reported three cures of epi-

theliomata of the face, with two failures. One of the cures was made in six weeks' time; the duration of the treatment in No. 2 was not stated, whilst in No. 3 the treatment had to be continued after an apparent cure, else the site of the old trouble showed a tendency to ulcerate.

The failures were due in one case to a too irregular treatment, and in the other case to a too extensive ulceration and the exhaustion of the patient.

Johnston reports two cures of epitheliomata, one after six exposures, another after twelve sittings at six inches distance and varying in duration from five minutes to fifteen minutes. He likewise cured two cases of horny growths (precancerous keratosis) after the same proceedures as No. 2.

Pfahler has one cure to his credit as reported Dec. 13, 1902. He gave the patient thirteen sittings varying from five to ten minutes in duration, the tube being between four to six inches from the epitheliomatous sore.

Morton seems to have been very successful with these cases. I have apparently cured four cases, one has remained cured since sixteen months, another showed a recurrence three months afterwards, but subsequent treatment seemed to have brought more lasting results, for the patient has remained well since eight months. One was cured by fifteen daily sittings varying from five to fifteen minutes at six inch distance; one by two sittings of ten minutes at one inch distance, another by about eight sittings varying from five to ten minutes at three to six in. distance, and the last by about twenty sittings at greatly varying distances and duration, the whole treatment lasting about two and a-half months. Another case has been twice healed over, but the results were not permanent; the patient is, however, still under treatment after nearly two years, and although no cure can be assured, the condition is so mitigated as to warrant the alterative use of the light treatment.

Facial conditions are manifestly more odorigenous than the same if elsewhere, and, were it only for the palliation of this annoying condition, it would be justifiable to use the X-rays, not to mention relief from pain, which usually follows their use. Perthes, at the last German medical congress, reviewing the published opinions of twenty-five experimenters, concludes that the X-rays have an undoubted special influence on the epithelium.

Carcinomata. The results from the X-ray treatment of malignant growths give us hope that we may yet possess a method capable of relieving a certain number of

sufferers from this terrible malady. Hopkins thinks there is a large proportion of all malignant growths which can thus be absolutely controlled.

In many cases he combines the use of both the Finsen light and the X-radiance. His experience and his successes have been progressive, and he has had a most encouraging series of results even in cervical cancer, where relief from pain, odour and flux was assured and where even a cure seemed to have been well nigh obtained.

In a case of cancer of the tongue, the combined Finsen light and X-rays had a most marvellous effect; in three weeks, with five sittings a week, he was able to eat solids, and to phonate. It would be too much to expect any cures for like conditions at present, and I have not seen even anything as gratifying as what Hopkins reports.

Visceral carcinoma (as of the stomach) is now treated by means of the so-called hard tubes, but these cases require the greatest amount of care and judgment, and it is best to err on the side of short exposures than do serious damage to the patient (Hopkins). I have failed to meet with any except useless and vexatious results, to say the least, although such results as those of Lemoine and Doumer, read before the French Academy of Medicine, are calculated to quicken our lagging hopes.

Just at present, carcinoma of the female breast is receiving the greatest amount of attention from radiographers. As a primary method of treatment it has no place unless where there are contra-indications to an operation. For recurrent conditions it is the only treatment we can safely turn to; improvement will be seen usually in two to three weeks, and the treatment need not interfere with the daily pursuits. The curative and the inhibitive power of the X-rays over malignant disease is not uniform (Leonard), such as possess the least tendency to metastases apparently yield more readily, just as in operation.

The failures usually depend on too weak a dosage, which rather stimulates than retards the growths.

There is such a rapidly increasing volume of testimony in favour of the use of the X-rays for this variety of human ailment that we cannot but hope that we are probably on the verge of a great discovery, capable of adding incalculably to the sum of alleviation of human suffering.

Selected Articles.

PREVENTION IS BETTER THAN ANY OPERATION.

If the medical profession (Gifford Knox, Westfield, N. J.) would spend more time in actual research and active discussion on how to avoid inflammatory conditions of the vermiform appendix, the caecum, and the contiguous territory, and some less in learned dissertations upon how to employ the knife successfully, the world would be benefited far more. That when the world at large wants to know is how to avoid operations, rather than how to do them. It is to be admitted as worthy of the most thoroughgoing consideration that the success that has attended the evacuation of abscesses located in the right iliac fossa has been remarkably gratifying; but surely this obscure and insidious disease should not be permitted to go on to the stage calling for such operative influence when daily attendance is the purpose of noting any such advance. The dread of opening the peritoneal cavity no longer holds the profession in docile fear. Brilliant achievements are done. It is becoming a happy rarity to have autopsies reveal conditions which might have been obviated by timely surgical interference. Mr. Bryant told me himself, more than nineteen years ago, that he advocated early interference. He said, "I do not think that because some cases recover without operative interference, we should forget that, if unrelieved, a large majority die miserably." Mr. Jacobson, one of the surgeons to Guy's Hospital, made me this remark, "I know," he said, "how fatal such operations have been, but I also know that very rarely a case gets well if left to itself." And leading American surgeons are not a whit less emphatic in urging operative measures. It is an easy operation, readily performed. The dangers are few, and the precautions are well reckoned. Some one has said, "It is done every day." True, and with the best of results in the majority of cases; but, I call for early diagnosis. And the disorders may go by either name, appendicitis or perityphilitis. It presents itself clinically in acute and chronic forms. In the chronic variety we have a pathological condition lying dormant, it may be, for years, but manifesting itself under special perturbations at irregular intervals. The changes

vary according to the duration of attack and intensity of the inflammation. In the acute variety the disease is either an inflammatory affection of moderate severity, tending toward resolution, or of great severity tending toward end fatally from perforation. Are we not justified in believing that there is the chance and opportunity of our moderating the severity of the malady and influencing toward resolution? No diagnosis is more plain. If the disease goes on to great severity, the operation demands attention. But why let it go on to such a stage and such severity? Remember two or three things in passing. Remember that the coil of the vermiform appendix unravels when distended, so that it projects into the peritoneal envelope much as if it were a foreign body. Remember that its walls are thinner and weaker than those of the contiguous intestine. Remember that its vascular supply is also less. Add such facts as these together, and it should go without saying that there obtains an extreme liability to purulent and necrotic changes, especially when the vessels become occluded or their circulation is materially retarded by pressure from over-distension, as in case of impaction within the appendix. The proneness to ulcerate and rupture is quite apparent, and the great danger has to do with the contiguity of the appendix to the peritoneum. It becomes evident, therefore, that the disease that results is most malignant, killing either rapidly from shock, or in brief course, from peritonitis. In the face of the terrible mortality we may well ask, "Are the anatomical lesions of such a nature as to thwart therapeutic interference?" Is science impotent? Is all of our dependence to be upon "timely surgical interference?" "Must we, upon a probable diagnosis, await the use of the knife?" The answer comes, based on some rational propositions. In the first place, the lesion is not *per se* necessarily fatal, but purchases fatality from the rapid development of the intercurrent complications. Secondly, the menace of peritonitis is always imminent. Thirdly, there is no redundancy of tissue in the appendix, and perforation is the result of molecular disintegration with loss of tissue. The patient presents the usual symptoms—fever of more or less intensity, anorexia, vomiting, nausea, tenderness and distress rather than acute pain. Three things should be obvious: (1) In proportion to the inflammatory process, the severity of the pain increases, and that inflammatory process concerns the peritoneum and its adjacent cellular tissue. (2) The peristalsis is diminished so that fecal accumulation in the caecum is a constant occurrence. (3) There is an invariable tendency to purulent

and necrotic changes, and perforation may occur at any moment during the progress of the inflammation. We have to deal with an exudative inflammation of the appendix vermiformis caeci, and continually tending to progress into the adjacent tissues. The natural course of this inflammation is protracted and marked by slow erosion of these tissues and the mucosa. Incident thereto is infection along the lymph channels, extension of thrombosis along the veins of the appendix, local abscesses in subperitoneal connective tissue, and the local and general peritonitis due to infection. The vessels or the appendix are clogged, as the exudate stops both venous and lymphatic circulation. The vasomotor control of the artery of the appendix and its branches interfered with, and chemic decomposition of the fluids and tissues is to be reckoned with. Here, then, is a stage where the disease is purely medical, and rightly treated, it could hardly be surgical. As soon as the patient has any reason to fear the disease, he had best be on the defensive. An "old-fashioned" English authority has recently said, "We never had typhilitis (appendicitis) when we kept ourselves under good control by the regular use of the dinner-pill." There is solid sense in that. If Lady Webster had left a generous supply of descendants and disciples, we would not have any appendicitis. There is apt to be constipation, as we have said. Dr. Robert T. Morris, asked as to a method of preventing the disease, says, "The removal of constipation is the removal of one of the dangers." There is constipation necessarily. It is largely due to interference with peristalsis. The history of the disease is a history of constipation. Very well. Then, when a person who is naturally more or less constipated has the early, prodromic symptoms of appendicitis, let the constipation be corrected, and correction means restoration of natural peristalsis. Let there be moderation in eating. Nourish him on easily digested diet. Get the bowels regular, and keep them so. The free use of pure water is an effective laxative, obviating all drastic methods. Beware of purging. The small intestines do not need it. The colon is impacted, and its contents should be quickly washed down with a hot saline, soapy enema. With a little patience the water can render its offices up to the caecum; and the colon freed of its contents is an important beginning of treatment. Having cleansed the colon, follow by an enema of sweet oil, that the mucous membrane may be healed. Repeat the water enema as needed. Apply cold water compresses to the affected abdominal area to allay heat and pain. Bodily bathing has its place.

General massage supplies the physical exercise essential to the higher interests of health. The clothing next the skin should be light and porous. The relief of pain must be circumspect, or it will impair every chance of recovery, and set at nought every important feature of treatment. Do not administer an ordinary opiate. Dr. Bernays says, and we cannot but agree with him: "Do not give opium or morphine in the beginning of an attack of appendicitis." He adds, "I know that a great deal of the mortality in my practice has been due to the use of those drugs before the operation." Dr. Morris says, "I regard opium as a dangerous drug, and a wicked thing to use." But, it will be said, what then? Surely the so-called substitutes for opium, the coal-tar products, do not answer all of the requirements; ergo—opium. I will not discuss this question along this line, but granting so much as is salient in the opium argument, and yet without any thought of bare "compromise," I would recommend to allay the pain by that preparation of opium which is so much of a reliance in peritonitis—papine. There is no better drug for anodyne effect under all ordinary circumstances. As soon as the colon is freed of its accumulation, give papine, and continue it systematically. Meanwhile we are not to forget that everything is pointed toward purulent disposition. Dr. Murphy, who has done 111 operations for appendicitis, and lost but four cases, says, "Pus or gangrene has been the cause of about 99 per cent. of my cases." Set it down for fact, with the beginning of tenderness in the abdomen, that the chances are all making straight for suppuration. Clean out the colon, control the pain, fix the habits, but above all things else, stop that suppuration. Give ecthol. Give it as you have never done before. Give it persistently up to the utmost maxium dose. Give it in connection with an appropriate chalybeate tonic. Give it to defend that patient from his doom. That is all, and that is enough. Cleanse out the large intestines, and keep them clean by enemata. Moderate the diet, and keep it moderate. Relieve and control the pain and the fever by papine. Fortify and defend from suppuration by ecthol. Tonic and stimulation aid to the nervous system, the rational use of massage, the ready employment of cold water externally, and the enforcement of rest, are to be considered in course. Understand, however, the medical treatment is not in place of the operation. When the disease has progressed so far as to demand the operation, accede to the demand. But, skilful medical treatment on these lines will forestall surgery, and is doing so to-day in private and hospital practice. One concluding point:

The equivalent in service is rendered in the medical treatment, and who will say that the experienced physician is not entitled to as high praise and as high a fee as the surgeon receives for the operation.—*Nashville Jour. of Med. and Surg.*

CANCER AND ITS CURATIVE TREATMENT.

The *Medical News* of April 25, 1903, introduces among its "Echoes and News" the following lines: "Captain Rost of the Military Medical Service, who has been investigating malignant cancers, bacteriologically, at the Rangoon Hospital for three years, announces what is believed to be an important discovery. He has found in both carcinomata and sarcomata cancers distinct germs of saccharomycetes, which can only develop when the natural chlorine in the tissues falls below the normal quantity. Following this clew Captain Rost devised a treatment to re-enforce the chlorine by special diet, enabling large quantities of common salt, which contains chlorine, to be absorbed. He has experimented with eight patients. One was completely cured and the condition of the others was improved. He will continue his experiments."

Commentary.—We have tried to trace this report to its source, but, after a perusal of various British and Indian journals, were unable to find the original article. The observations of Captain Rost are of particular interest to us, because they indirectly confirm conclusions to which we were led by inquiry into the nature of cancer, which conclusions differed from any previously propounded. As ythe are incorporated in our work, "The Internal Secretions and Principles of Medicine" (*vide* page 785), we cannot do better than reproduce them from the book itself.

"Certain growths, particularly the more malignant forms, sarcoma and carcinoma, seem closely connected with adrenal insufficiency and its normal consequences. We have seen that trypsin, fibrinogen, and the oxidizing substance (adrenoxin) were simultaneously necessary to insure the destruction of cells even *in vitro*, and, furthermore, that this process required in addition *the presence of alkaline salts*. That the destruction of wornout or degenerated cells is a function of these very elements in the blood is evident. Insufficiency of the adrenals, therefore, by reducing the

relative proportion of these four constituents in the blood-stream, must correspondingly inhibit this physiological process in all parts of the organism.

" As to sarcoma, the similarity between the cellular elements of the small round-cells variety and mononuclear leucocytes is striking ; each cell shows its nucleus, fibrils, and granules, though, of course, more or less modified, owing to abnormal environment. The large round-cell sarcoma recalls the metamorphosis into epithelial cells which eosinophiles undergo in the pulmonary alveoli ; indeed, the cells of melanosarcoma contain the blood-pigments themselves. Grouped as sarcomata are now, according to the variety of connective tissue which forms their frame-work, we have, as is well known, myo-, lympho-, fibro-, smyxo-, glio-, osteo-, chondro-, myelo-, melano-, angio-, and finally neuro-sarcoma, all of which clearly indicate that any part of the system in which nutrition is, from one cause or another, relatively impaired, may become the seat of this malignant growth, or rather of a *local accumulation of the aberrant or wornout cells which enter into its* formation. The great vascularity of these growths suggests an effort of nature to cause their elimination, but mitotic proliferation is alone induced, the blood being deficient in the four constituents which should insure destruction of the morbid cellular elements.

" Apart from the marked vascularization peculiar to sarcoma, the same pathological process obtains, it seems to us, in cancer, although here we are dealing with a localized accumulation, retention, and proliferation of epithelial cells. Their multiplication *in sutu* occurs (as in sarcoma) partly in virtue of the fact that they ' cannot fully utilize the assimilated material in the performance of [their] specific functions,'[1] and partly because the potential energy of their nuclei becomes converted into sufficient heat energy (with what oxidizing substance reaches them) to induce proliferative activity. Ritter[2] found the nuclear chromatin to be precisely that of normal tissue, and the cellular karyokinesis to differ in no way from that observed in the normal physiological process.

" Adrenal insufficiency also accounts for the complications witnessed. As the accumulated elements degenerate, toxic products of decomposition enter the blood, and, by lowering the functional activity of the anterior pituitary

1 Adami : British Medical Journal, March 16, 1901.
2. Deutsche Medicinische Wochenschrift, June, 1901.

body, finally bring on the cachectic stage. The foci of retained cellular elements become also more numerous: *i.e.* "metastasis" occurs in one or more regions. That the adrenal system is primarily at fault is also suggested by the predilection of the aged to malignant growths, the recognized influence of "general debility," localized malnutrition as a result of trauma, cicatrices, etc., and by the fact that the only internal remedies that have proven of any value whatever are powerful adrenal stimulants: erysipelas toxins (Fehleisen), erysipelas and bacillus prodigious toxins (Coley), thyroid extract (Dorland), lysol and iodine (Behle-Luckau), sodium cacodylate (Benoit), and the better known arsenic, quinine etc.

"Owing to the adrenal stimulation induced, the four constituents capable of disintegrating the morbid cellular elements, trypsin, fibrinogen, oxidizing substance, and alkaline salts are supplied to the blood, and these, under normal circumstances, should cause disappearance of the growth. But, unfortunately, such a result is but rarely reached even under the violent adrenal stimulation which Coley's toxins must cause. How account for this? The Roentgen rays, as suggested by the results already obtained, seem to us to supply one of the missing factors upon which the curative process depends, *i.e.*, a local accumulation of heat energy and a congestive process through which neutrophile leucocytes (owing to their phagocytic and fibrinogenic properties) are caused to immigrate into the growth in large numbers, to convert the degenerated cellular elements into benign products. Here, again, however, *the curative process requires alkaline salts* in addition to those normally utilized by the organism, in order to insure the full hæmolytic activity of the tryptic intraphagocytic digestion. The frequent use of saline solution thus asserts itself as the remaining measure indicated to insure success in the bloodless treatment of malignant tumours."

Since the first volume of our work has appeared, investigation in other lines (to be presented in the second volume) have but confirmed the foregoing deductions and have suggested thyroid extract as the most effective adrenal stimulant among those enumerated above (though arsenic has been more extensively used) as indicated in cancer, in addition to the use of Roentgen rays and saline solution.

So far thyroid extract has mainly been used for cancer

of the breast in connection with oöphrectomy. Beatson[3], among others, resorted to this compound treatment in several cases, a few of which appear to have been greatly benefited. Page and Bishop, however, caused the entire disappearance of a carcinoma of the breast in a woman, 61 years of age, by the use of thyroid extract alone, beginning with 3 grains and increasing until 15 grains were given daily. At the time of the report, two and one-half years later, the patient was well and no trace of the neoplasm could be discovered. While these results do not warrant the acceptance of thyroid extract as a specific in the treatment of malignant growths, they nevertheless suggest that it exerts a beneficial influence.

The Roentgen rays have now asserted their beneficial powers in a large number of cases; and if Captain Rost's observations prove sound, the three indications which our analysis of the question has suggested (1) *adrenal stimulation:* (2) *accumulation of heat in the growth,* and (3) *alkalinization of the cellular elements,* may be satisfied by agencies which have shown individual curative properties. On the other hand, the failures recorded to the credit (at least so far) of thyroid extract and the X-rays seem to be accounted for by the fact that, used singly, they prove active only in cases which are structurally or pathologically adapted, so to say, to their effects. It seems to us, therefore, that recovery might be hoped for in at least a majority of cases of malignant growth by the *simultaneous* use of: —

1. Thyroid extract (or, if not well borne, suprarenal extract, iodide of potassium, or biniodide of mercury).
2. Frequently repeated hypodermoclysis.
3. Roentgen rays.

To avoid recurrence, thyroid extract in small dose, or strychnine, to sustain the functional activity of the adrenal system, and a diet rich in chloride of sodium, such as that employed by Captain Rost appear indicated.

C. E. DE M. SAJOUS.

Monthly Cyclopedia of Practical Medicine, May, 1903.

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1. Lancet, July 11 and 13, 1896.
2. British Medical Journal, October 19, 1901.
3. Lancet, May 28, 1898.
4. Wiener klinische, Wochenschrift, February 8, 1903.

Progress of Medical Science.

MEDICINE AND NEUROLOGY.

IN CHARGE OF

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THE VALUE OF ARTHROTOMY IN THE TREATMENT OF CERTAIN JOINT LESIONS.

Many cases of what may be called subacute septic joint lesions follow or occur contemporaneously with septic infections—*e.g.*, influenza, scarlet fever, measles, or pneumonia. Other cases occur after some septic lesion, such as a whitlow, or oral sepsis; and the organism has been demonstrated in the joint fluid. Certain cases known as chronic rheumatism, or rheumatoid arthritis, may be really pyæmic in origin, and comparable with gonorrhœal arthritis. The fineness of the capillaries in the synovial membrane, or some antecedent trauma, may determine the localization in the joint of organisms circulating in the blood. Drs. Poynton and Paine have produced in rabbits a subacute or chronic arthritis by the intravenous injection of a diplococcus. There are two types of septic arthritis following infection of the blood—the acute and the subacute—sometimes called pyæmic arthritis, but not part of a general pyæmia. The primary focus from which the blood is infected is often insignificant.

Acute septic arthritis is generally the result of direct infection from a wound, and is not common from blood infection, except as part of a general pyæmia. It does occur, however, as in the following case: In one patient, æt. 21, who was out of health, a slight abrasion of the finger caused a pustule. Five days later he felt a sudden pain in the left ankle. Four days later he was admitted to hospital, very ill, with a temperature of 102, and the left ankle much swollen and inflamed, and evidently containing pus. The finger had nearly healed. Incisions were made into the

ankle, which was treated with a continuous water-bath. The incisions had to be opened again a week later, and ultimately septicæmia rendered it necessary to amputate. After this the patient recovered. There was no history of traumatism, no previous joint disease, and no general pyæmia. The infection seemed to come from the finger; and earlier opening of the joint would probably have saved the limb. In such cases the occurrence of pus should not be waited for. For although many patients may recover without opening the joint, the risk of delay is infinitely greater than that of early incision. All that is said in favour of early operation in septic lesion of the peritoneum applies with equal, if not greater force to septic joint lesions. It seems to be thought that the best that can be expected in septic joint lesions is a stiff joint. But with early opening, irrigation and draining, the results would be much better.

Subacute septic arthritis may follow sepsis after pregnancy or the acute fevers or gonorrhœa. Treated by rest and lotions these cases show frequent formation of adhesions, or recurring attacks of synovitis; whereas opening the joint and washing it out gives excellent results. The joint lesions are often mistaken for acute rheumatism, but the condition does not react to salicylates. The joints should be opened, adherent lymph removed, the cavity washed out, and the wound closed. The process greatly reduces the time during which the patient is incapacitated, and prevents further damage to the synovial membrane. The patient is usually able to use the joint freely in ten days or a fortnight after the operation.

In gonorrheal arthritis there is a marked tendency to the formation of adhesions, and recovery is very slow. But, with opening and washing out the joints, especially if done early, the disease usually rapidly subsides.

In the more chronic cases of septic joint, massage and movement should first be tried. If unsuccessful, arthrotomy should be performed, and the joint irrigated. In many cases in which firm fibrous adhesions have formed, opening the joint and dividing the toughest bands is often better treatment than attempting to break down the adhesions by force. Arthrotomy again is the best treatment where hæmorrhage has occurred into a joint as the result of injury.

It is only fair to mention the use of arthrotomy by Dr. O'Conor, of Buenos Ayres, in cases of acute rheumatism.

It is claimed that this treatment lessens the duration of the disease, and the liability to cardiac lesions. Dr. O'Conor believes that the joints form the infected foci from which the heart is affected. In this country, where rheumatic fever seems to react to the use of salicylates, it seems difficult ro believe that arthrotomy is needed.

With regard to the operation, in the case of the knee-joint, the best incision is a vertical one on the outer side of the joint one and a-half to two inches in length. In this way the scar is less likely to become adherent to the bone. In the ankle-joint a vertical incision should be made just behind the external malleolus. Through the incision the joint fluid is evacuated, some being kept for bacteriological examination. The joint is then thoroughly washed out with sterilized hot water, or saline solution, any adherent lymph being carefully removed. Antiseptic solutions are probably useless, and may injure the synovial membrane, The joint should next be dried with aseptic sponges, and the edges of the wound closed, the edges of the synovial membrane being well approximated. It is often unnecessary to put in a drain, except in acute cases. If drainage be necessary, gauze wicks are best. Tubes are apt to be nipped between the bones, while gauze can be more easily placed in the part of the joint where drainage is required. and a depressed scar is less likely to result. The gauze can be removed in from twenty-four to forty-eight hours. To drain the knee-joint efficiently the patient should be placed in the prone or the lateral position, so that the incision is at the lowest point. In bad cases of septic arthritis of the knee, where drainage is difficult or the symptoms are not relieved, it is well to expose the joint by dividing the patella transversely. After dealing with the synovial membrane, proper drainage is provided and the patella wired. No splint should be applied, as a slight amount of movement assists drainage. After the wound is dressed firm pressure should be applied by cotton wool to prevent the accumulation of fluid. The joint should be moved daily from the day succeeding the operation, voluntary movement being preferable. Massage may be necessary in the more chronic cases when the muscles have become wasted.

I regard the operation as simple and practically free from risk, the open method being infinitely superior to aspiration. Before closing the wound it is important that all bleeding should be stopped.—P. Lockhart Mummery, F.R.C.S., Eng., in *Dublin Medical Press.*

THE TREATMENT OF DROPSY OF CARDIAC DISEASE.

By S. C. Reisman, M. D., New York.

In the earlier stages of valvular diseases of the heart in which the interference with the circulation of blood through the organ has been fully compensated by hypertrophy of the heart muscle, no indication presents itself for the use of diuretics. It is in the later stages when compensation fails and when the hypertrophy gives place to a condition of dilatation that these remedies are frequently required. Owing to the weakening of their walls the ventricles are no longer able to propel the blood in sufficient quantity and with sufficient force through the vascular system, and this is further increased by the lowered tension in the arteries. Under these circumstances the blood tends to stagnate in the various organs and a condition of venous stasis results, with the exudation of serum into the tissues and the cavities of the body.

The management of these cases of cardiac dropsy is rendered still more difficult by the frequent existence of renal disease as the result of the cardiac lesion. While it is impossible to formulate any special system of treatment, since this must depend to a great extent upon the conditions present in individual cases, it may be permitted me to briefly discuss this subject in the light of my own experience. For the relief of dropsy in cardiac disease a number of methods are at our disposal. It may be sufficient to administer remedies which will increase the force of the heart and raise the arterial pressure, such as digitalis, convalaria, storphanthus, etc., these drugs being known as indirect diuretics. In connection with these it is a common practice to administer alkalies, especially acetate of potassium, which tends to stimulate osmosis in the glomeruli and also promotes the elimination of solids in the urine. Then there is a group of diuretics which act directly upon the renal epithelium, comprising such remedies as squills, juniper and cubebs, but their use is rarely admissible owing to their irritating effect upon the kidneys, which may give rise to severe congestion and light up an acute process in these organs. Hence, before resorting to them, the condition of the kidneys should be carefully determined by an examination of the urine. If evidences of organic changes in the renal secreting structures are found, we should abstain from the employment of this class of

diuretics. For this reason they are rarely of service in cardiac dropsies, owing to the frequent presence of renal complications.

Another means of removing dropsical effusions in diseases of the heart is by the use of cathartics. The compound jalap powder has been extensively employed for this purpose, while many prefer the administration of calomel. It must be remembered, however, that in patients suffering from cardiac disease the use of drastic cathartics is fraught with danger on account of their debilitating effect, and therefore they must be administered very cautiously, if at all.

The same remarks apply to the use of diaphoretics, and even in a stronger degree. They all have a depressing action upon the heart and seriously interfere with its functions. Quite a number of deaths from heart failure in the Turkish bath have been reported.

We finally come to a group of diurectis, which are of special value in the dropsy of cardiac disease, because of their comparative freedom from toxic effects. These are derivatives of caffeine and theobromine, especially the latter. Caffeine is a rather unreliable diuretic, while theobromine is considered much more efficient. Theobromine itself, however, cannot be utilized, particularly owing to its difficult absorption, and for this reason various double salts have been suggested, the latest of which is known as agurin, being chemically acettheobromine sodium. The advantages of this salt are that, unlike the salicylate of theobromine, it is free from any irritating effect upon the gastro-intestinal tract and kidneys, while the acetate of sodium, which is one of its ingredients, participates in its diuretic action.

Agurin appears as a colourless powder, having a salty somewhat bitterish taste, soluble in water. It is best administered in wafers or capsules or in freshly prepared solutions. In giving it in solution the addition of syrups should be avoided, so as to obviate any precipitation of theobromine. The dose varies from 5 to 10 grains three or four times daily.

This preparation was discovered by Dr. Impens, who, in experimenting with various theobromine salts on animals, gave it the preference over any of the others. It was next tried in the clinic of Destree of Brussels, and found to be of value in cardiac dropsies, in which it increased both the excretion of water and solids in the urine, especially the chlorides and phosphates. For this reason he regarded it

as contraindicated in cases of phosphaturia. In v. Litten's clinic in Berlin, experiments with agurin also proved very satisfactory, and under its administration the amount of urine was rapidly increased, sometimes in a remarkable degree. Favourable reports have also been made by Professor Buchwald, of Breslau, Dr. Holle from the clinic of v. Ziemssen, in Munich and others. From these observations it appears that agurin is quite a useful diuretic in cardiac dropsies, having the advantage of being well tolerated and of not affecting the heart. If necessary it may be given in connection with digitalis and other cardiac tonics. * * *

In conclusion, I would say that my results with agurin, which coincide with those obtained in v. Litten's clinic, as published in the *Deutsche Aerzte Zeitung*, December 15, 1901, permit of the following deductions :

1. That agurin has the advantage of not irritating the stomach and kidneys.

2. That it is a more powerful and efficient diuretic than the other salts of theobromine.

3. That while indicated in many conditions of dropsy it is especially valuable in that due to valvular disease of the heart.—*Denver Medical Times*, September, 1902.

THE TREATMENT OF PNEUMONIA.*

By R. W. WILCOX, M.D. LL.D., NEW YORK.
Professor of Medicine and Therapeutics, New York Post-Graduate Medical School and Hospital ; Physician St. Mark's Hospital.

After briefly reviewing the various methods of treating pneumonia, the author states as follows

So late as 1897 Osler believed that we had no reliable measures at our disposal to combat the toxæmia of pneumonia. Within two years, however, Cassoute and Corgier reported that after continuous administration of fairly large doses of creosote carbonate (containing 91 per cent. of creosote, and made from it by the action of nascent carbon dioxide) in most cases a typical fall of temperature occurred during the first twenty-four hours of treatment, and if the remedy was persisted in for a sufficiently long period of time, the apyrexis became permanent. Relapses and sequelæ so often seen under other methods were entirely absent. So positive an assertion could not escape attention. Creosote—

*Read before the New York State Medical Association, 98th Annual Meeting.

better beechwood creosote—is not a new remedy, but its caustic action and its irritating effect upon the kidneys when given in necessary amounts has prevented its use. So pronounced were these untoward results that I had abandoned its use in pulmonary tuberculosis several years earlier. The daily dose of creosote carbonate was from two to four drams, the dose interval being six hours. So soon as the temperature reaches the normal, the amount is reduced to one-half, and this is continued so long as auscultatory signs persist. What are the results? Cassoute and Corgier reported favourably upon eighteen cases; Stokes 7, Bridges 8, Meitner 13, Eberson 4, Van Zandt 16, Von Ruck 20 (complicating pulmonary tuberculosis), Weber 9 and Thomson 18 cases From these observations the statement of Van Zandt is fair—that creosote carbonate cuts short or aborts a large percentage, mitigates almost all the rest, and in a small percentage of pneumonia there is no result. Certainly if the early appearance of crisis is any indication of the value of the treatment, this remedy merits a careful trial.

My own experience covers 33 patients with no deaths. The disease terminated by lysis in 9; by crisis in 24. Crisis occurred on the sixth day in 1, seventh in 2, eighth in 9, ninth in 1, tenth in 3, eleventh in 2, and on the 12th day in 1 patient. In two patients above the age of 70, lysis occurred. Of three alcoholic subjects, in two lysis and in one crisis was noted. Two instances of double pneumonia both terminated in lysis; in one the infection of the two lobes was contemporaneous, in the other by sequence. Aside from the remarkable reduction of mortality, the increased percentage in which crisis is noted is suggestive as to the true significance of that phenomenon, and is an argument for the value of the remedy in nullifying bacterial activity and its results.

Dr. Wilcox further states that under this method of treatment tympanites is rare and the necessity for calomel greatly reduced, and concludes as follows:

The present status of the treatment of pneumonia is especially satisfactory when results are considered. To summarize: 1. Continuous, persistent and generous administration of creosote carbonate. 2. Careful adjustment of mechanical conditions. 3. Thorough evacuation of toxins by all possible ways. 4. Temporary supplemental oxygen by inhalation. 5. Liquid diet until physical signs disappear.

To be avoided are antipyretic opiates, ill-advised exter-

nal applications and slowly-acting heart remedies, as digitalis.

[Abstracted from the "American Journal of the Medical Sciences," September, 1902.]

THE TREATMENT OF INSOMNIA OF PULMONARY TUBERCULOSIS.

By S. C. Reisman M. D., New York City.
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One of the most difficult and troublesome conditions to control effectively in pulmonary tuberculosis is the insomnia which so frequently accompanies this disease. A tubercular, when he does not enjoy the recuperative influence of refreshing sleep, undergoes all the tortures of Dante's condemned spirits.

This insomnia is due to various causes; either to excessive cough from the accumulation of secretions in the bronchial tubes, the irritating nightsweats, pleuritic pains, or to mere nervous excitability.

The effect of loss of sleep in these patients is to drag them nearer the approaching end. They become despondent, lose all hope (and the sufferer of this malady when he is able to sleep is, as we know, hopeful to the very last breath); they lose their appetite; the eyes bulge out of their sockets, and acquire a wild stare as in one demented—a group of symptoms which I can instantly recognize as a result of a loss of that "chief nourisher in life's feast," sleep.

Knowing the causes of the insomnia, the rational method of treatment is the employment of means to eliminate these disturbing factors. We are, however, but rarely able to accomplish this, and we are forced to treat the condition symptomatically; to resort to some measure that will produce undisturbed sleep, and shortly after its administration.

As it has been my fortune to treat a large number of patients suffering from this dread disease, and being dissatisfied with the numerous deleterious by-effects of the hypnotics of the pharmacopeia, I thought it worth while to investigate one of the newer sleep-producing remedies, named hedonal.

Professor Dreser, in his painstaking report on hedonal, explicity states that the drug has absolutely no injurious effects on the heart, circulation and body temperature, and that it is completely oxidized in the system into water and

carbolic acid, and hence I felt convinced that there was no danger of an accumulation of the drug in the body. I was further assured by several medical friends who had already employed this remedy that they had observed no toxic symptoms during its use, and though still distrustful I commenced its employment.

As a result of my careful investigation of hedonal I can most heartily confirm the opinions of its most enthusiastic admirers. The remedy has proven most valuable to me in the class of patients referred to. I have found it to be rapid and reliable in its action, non-irritating to the gastro-intestinal, circulatory or genito-urinary systems, and devoid of after effects. It has pronounced advantages over the older hypnotics, being superior to both morphine and chloral hydrate. It is better than morphine in two respects; first, it does not engender any craving; second, it does not produce any of the after-effects of morphine—namely, headache, nausea, disagreeable taste in the mouth and constipation. Over chloral hydrate hedonal has manifold advantages. It produces calm refreshing sleep, even if the patient is suffering with pain; it creates no drug habit; it causes no gastric irritation, and at the same time it allays the harrassing bronchial sensitiveness.

I believe that hedonal will also be found valuable as a sedative in nervous diseases of a functional type and in conditions of cerebral congestion and irritation. I have not as yet, however, had sufficient opportunity to test it to my satisfaction, but I feel warranted in at least hinting at its expanded field of usefulness.

I have tried hedonal in eighteen tubercular patients, and not in one instance has it failed to produce the desired effect. Of course, in many instances I had to add heroin hydrochloride, 1–24 grain to the hedonal in order to first quiet the cough.

The description of other cases would be but a repetition of the excellent sleep-producing properties of hedonal. I hesitated long before using the drug, as most physicians do with new remedies, but after my experience I can heartily and confidently recommend its trial. I believe it is destined to replace, in many instances, the established remedies where we desire a pure hypnotic free from all possibility of injurious action.—*Buffalo Medical Journal*, October, 1902.

SURGERY.

IN CHARGE OF

ROLLO CAMPBELL, M.D.,

Lecturer on Surgery, University of Bishop's College ; Assistant Surgeon, Western Hospital ;

AND

GEORGE FISK, M.D.,

Instructor in Surgery, University of Bishop's College ; Assistant Surgeon, Western Hospital.

FRACTURE OF THE LONG BONES.

The long bones, the skeletal extremities, are the mobile and prehensible parts of the human organism designed, not for the protection of its vital centres, but as an aid in its struggle for existence. In fetal life, they are cartilaginous with points of ossification beginning at the centers and at the ends of the shafts of the bones. A laying down of mineral matter continues throughout life, though to a less extent after adolescence. The epiphyses remain cartilaginous and separate until the bone is fully formed. Thus with different bone conditions, we have different kinds of fractures; the green stick and epiphyseal in youth ; and on the other hand those of old age which result from little or no violence ; the former from too little, the latter from too much lime deposit. Most of the fractures seen in private practice are those of the long bones. In thirty-five consecutive years in the London hospitals, over 78 per cent. were of this kind, and we may say no others give rise to malpractice suits. In their treatment, one of the first things to be considered is the choice of splints. The ideal splint is simple in its construction and operation. Its utility is in inverse ratio to its complexity. It is strong, light and inexpensive, readily applied and removed, aseptic and easily kept so. Plaster of Paris comes as near meeting these requirements as any material, and is the most universally used. A favourite splint, and one especially recommended for fractures of the thigh in children, and posterior and anterior fractures of the leg in adults, is the Cabot splint. It is formed to fit each case of

wire the size of a lead pencil, which is wound first with sheet wadding, then with a roller bandage and the splint as a whole is then wound with a roller bandage. A splint well adapted to children is the Boardman. It is a quadrangular frame of gas pipe or tubing, covered with canvas, similar to a stretcher, and should be two inches wider and six inches longer than the patient. A year ago at Detroit, Dr. Gillette, of St. Paul, called the attention of the profession to its use in spinal diseases of children. Dr. Scudder in his late work on fractures in speaking of this splint fails to mention its uses in fractures of the lower extremity in the adult. It has now been found valuable as an aid to, though never as a substitute for other splints, in adult cases, and for several years the Boston City Hospital has used this in all cases in adults where the injury makes the handling of the patient difficult. It gives firmness to the bed and provides a means to move the patient without disturbing the broken bone. In connection with the subject of splints, we may discuss the ambulatory treatment of fractures for the reason that upon the kind of splint, and manner of application, depends the success or failure of the method. Ambulatory treatment may be defined as "that treatment of fractures that permits the immediate and continued use of the injured limb as a means of locomotion." As early as 1881 Dr. Thomas, of Liverpool, used this method, but not until the German surgeons, Krause and Korsch, wrote of it, and exhibited their work from 1891 to 1894, did the medical world realize the possibilities of this new method. The efficacy can now be judged, as over a thousand cases have been reported. Plaster of Paris is generally used, applied directly to the skin, without any cotton beneath it. In fractures of the leg, it is so applied that the weight is borne by the tuberosities of the tibia and fibula, aided by the shape of the muscles of the calf of the leg, and also by the cone shape of the bones. An elastic cushion is formed between the sole of the foot and the cast by an inch thick pad of sheet wadding. Thus in walking no weight comes on the lower fragment, the foot being suspended. In fractures of the thigh and hip, the weight is borne by the perineum and ischium by the use of the Taylor or a Thomas splint. There is made in Chicago a Taylor pneumatic splint made to fit the limb by means of inflating rubber rings with air, which is said by those who have used it to be most excellent. Walking is attempted the next day after the splint is put on, and the time in bed is reduced to seven days.

The admirers of the ambulatory treatment claim for it that it hastens recovery ; that there is less stiffening of the joints ; less atrophy of the muscles ; and that the general health remains better. But this treatment should not be undertaken unless it can be under constant skilled inspection. While this treatment is too radical for most of us, we may well modify the traditions of the past and be led to believe that we have been keeping our cases too long in bed. From two to three weeks will be sufficient in most cases when the permanent dressings should be applied, and walking with the aid of a crutch and a high shoe on the other foot should be urged, watching it to see that swelling does not take place, interfering with the circulation. After choosing the splint best adapted to the case, and reducing the fracture, the greatest care is required to avoid the shortening, a constant factor in all cases. The natural elastic tension of the muscle causes contraction, and if we use the weight and pulley to counteract this, enough weight must be used to place the bone in its normal position. It varies in each case and is ascertained by a trial. Instead of the weight and pulley, a Thomas or a Taylor splint may equally well be used, where instead of a pull there is a push and the splint rests upon some bony prominence above the seat of fracture. Shortening may also occur from a muscular spasm, caused by the irritation to the muscular substance or an injury to its nerve supply by the sharp broken ends of the bones. Often it is not overcome by anesthesia nor ordinary force. In this case, should it be an open fracture, suturing will readily overcome the difficulty. But should it be a closed fracture, we may first try tenotomy. This puts the parts at rest by relieving the tension. Cutting the tendon achillis will be found useful in fractures of the leg. Dr. Wharton, of Philadelphia, reports a case of Pott's fracture which he could not reduce until he had cut this tendon. This procedure will also overcome the action of the gastrocnemius and plantaris, which causes a backward and a downward displacement of the lower fragments of the femur in condyloidal fractures. Epiphyseal fractures of the femur are hard to keep in place. The popliteal space is rich in blood vessels and much manipulation of biceps then causes thrombosis, often resulting fatally. Cutting the tendons of the semimembranosus, the semitendinosus and makes this fracture an easy one to keep in place. The tendons of the upper extremities are so well relaxed by flexion and extension that a tenotomy is rarely justifiable, but when

necessary, one should never hesitate to do it. Prof. Sprengel, of Germany, and others, use the weight and pulley in all fractures of the leg, arm and forearm as routine practice, claiming to get less shortening. When union does not take place in the average length of time, it is called delayed union, and when, after further treatment, no union takes place, it is called non-union. Rheumatism, lactation, syphilis, old age, anything that tends to lower the vitality of the patient are constitutional causes of non-union, while local causes are: malposition, foreign bodies between the fragments and trophic changes. Electricity causing tonic contractions of the muscles prevents atrophy and trophic changes. Massage aids by bringing more blood to the parts and relieves passive congestion. Indeed we should use massage as routine treatment in a great many fracture cases. Operative means will correct malposition and remove anything between the fragments. But, should there be much swelling or inflammation present, it is preferable to wait until it subsides, thereby putting the tissues in the best possible position to resist the infection to which they are liable to be exposed. Silver wire is ordinarily used for suturing, though absorbable sutures which will last three weeks do very well. Dr. Sick, of Hamburg, has introduced ivory and silver plates used with ivory and silver screws, respectively. Silver is better than ivory, as it does not corrode. Dr. Sick also uses an ivory peg three-eighths of an inch thick, which is inserted in the ends of the bone. This latter requires a great deal of mobility to accomplish, but, when feasible, makes the strongest joint. After these methods have all failed and non-union still exists, the treatment suggested by Dr. C. H. Mayo commends itself, that of keeping it an open fracture and packed, so it will granulate from the bottom, as one would an ordinary case of necrosed bone.—G. R. Curran, M. D., in *St. Paul Med. Jour.*

TREATING CARBUNCLES WITHOUT INCISION.

Dr. Salvatore Gucciardella (in the *Gazetta degli ospedali e delle cliniche* of October 5, 1902), tells of spraying a hot 2 per cent. carbolic-acid solution over the carbuncle, followed by hot antiseptic compresses. The vapour consists of steam from a boiling solution, guided to the part by four long tubes narrower at the end nearest the patient, which is about ten to twenty inches distant from the carbuncle. Screens

prevent the dissipation, diverting or premature cooling of the steam vapour before it reaches the patient. Steamings last from one-half hour to an hour, and are repeated three or four times daily, or oftener. The hot compresses are soaked in a 1,000 to 2,000 bichloride solution, or 2 per cent. carbolic acid. Rapidity of cure is in proportion to the frequency and duration of the applications.—*Medical Council.*

ABORTION OF FELON BY ALCOHOL UNDER AIR EXCLUSION.

Dr. J. R. Eastman, of Indianapolis, Indiana, claims that a commencing felon will always be aborted by the local application of alcohol under perfect air exclusion. Cotton is saturated with the alcohol and placed about the affected part and a thin rubber finger-stall applied over all. Seventy-two hours usually suffices to give relief and even effect a cure. He learned this in Von Bergmann's polyclinic in 1897, since which time he has not had occasion to lance a single felon, the treatment of which was begun in time by this method.—*Medical Council.*

POINTS ON THE PREPARATION OF THE SKIN FOR THE SURGEON AND PATIENT BEFORE OPERATION.

The very elaborate methods for aseptic preparation of the skin of the surgeon's hands, and of the field of operation, which were cumbrous and not very effective in the early days of antiseptic surgery, have gradually given way to the more refined methods that are based upon an accurate knowledge of the factors with which we have to deal, and I have recently been employing a method which promises to be used simply that we can spare our patient very much of the disturbance that follows the rather complicated methods for preparation of the skin when the work is to be thoroughly done.

There are two chief factors of skin preparation.

1. We know that bacteria cling to the roots of hairs, and that they are found slightly beneath the surface in the hair follicles, and also imbedded in the surperficial epithelium.

2. The second fact embodies the idea that it is not absolutely necessary to get all bacteria out of the field of

operation, because a small number may be readily handled by the leucocytes of the patient, and it requires a rather full degree of infection to overcome the factors of natural resistance of the patient.

The preparation of the skin of the surgeon's hands by the method of using potassium permanganate and oxalic acid seemed at one time to be the most thorough one for securing asepsis of the skin, but this method, when employed at frequent intervals, would leave the surgeon's hands so rough that the superficial cracks of the skin would be prone to harbour bacteria in their recesses, and, further, the surgeon's nice sense of touch would be injured by the hardening of the superficial epithelium.

The same criticism applies to the method of preparation of the hands with a strong bichloride of mercury solution after carefully washing with green soap, and I have seen the skin of assistants so discolored and cracked that there was danger of permanent injury being done.

When rubber gloves came into vogue a short time ago, it was thought that the surgeon's hands would be saved, and that the patient would be given a further guarantee of asepsis on the part of the surgeon; but there is one very important objection to the use of rubber gloves—they certainly interfere with that sense of touch which is so important if one wishes to do very rapid work and in a delicate way without much handling of the tissues of the patient, and with the idea of conserving his strength by finishing the operation in the shortest possible time.

This feature is so important that I have not been willing to use rubber gloves excepting in exceptional cases, as, for instance, in a patient with diabetes, whose natural cell resistance would be diminished and whose blood was a particularly good culture medium for bacteria. Sometimes, in operating upon a septic patient, it has seemed wise to put on the rubber gloves before proceeding to work upon another patient who is without infection.

The rubber gloves are of advantage if the surgeon is not in good health at the time when he is operating; the principles involved in this point are not, perhaps, as fully appreciated as they should be. Every operator carries in the superficial epithelium of his hands a number of bacteria which are not destroyed by any ordinary preparation in advance of operation. These bacteria in a surgeon who is strong and well are latent and are kept in check by the cell

resistance of the surgeon and are not likely to make foci of infection in the patient. If the surgeon, on the other hand, is not feeling well, if he is even suffering from so simple a matter as a "hard cold," his cell resistance is diminished for the time being, and bacteria which would ordinarily be latent are in a state of proliferation and are ready to form foci of infection.

There are some men, further, whose hands are apt to be rather moist most of the time, and whose epithelium, consequently, is apt to harbour more proliferating bacteria than that of others whose hands are normally dry. With these few exceptions, the use of rubber gloves is by no means necessary and may be considered to be very undesirable on the score of interference with that most precious possession, a trained touch.

The best method for preparation of the hands that I have employed is the one that has been so well described by Dr. Robert F. Weir. It consists in sterilizing the hands by means of nascent chlorine gas. The surgeon takes in one hand a heaping teaspoonful of commercial chloride of lime and an equal quantity of powdered carbonate of sodium. If water is then poured into the hand, the two powders make a paste in which a reaction rapidly sets free chlorine gas, and, if this mixture is thoroughly rubbed over the hands for two or three minutes, we get a very complete sterilization of the skin without much injury to the epithelium. At one of the hospitals at which I sometimes work continuously at operating from morning till night, this preparation of the hands has been the only one that has allowed me to escape after the day's work with my hands in condition for operative work on the following day. The only objection to this method that I know is one that concerns the nurses, for if any of the mixture of chloride of lime and of carbonate of sodium happens to get upon towels or linen it will injure the fabric.

The preparation of the skin of the patient in the field of operation has, until very recently, required shaving, for the purpose of removing even the smallest hairs which carry bacteria about their roots in such numbers that sterilization cannot be easily effected unless the hairs are removed. The green soap poultice, the bichloride scrubbing and the elaborate preparation of the skin of the patient are apt to cause a good deal of mental commotion on the patient's part, particularly if the patient is a woman, we may have to prepare

areas about which the patient is naturally very sensitive about having them exposed.

From the results obtained by the nascent chlorine method for preparation of the skin in emergency cases, I have come to feel that perhaps this short and simple method for preparation of the skin was all-sufficient, and that we might do away with all of the preparation except shaving; even this now seems to be apparently unnecessary, if a method which I have employed for the past six months continues to be as satisfactory as it has up to the present time. I refer to the removal of the hair with depilatories which contain various sulphides. The sulphides of some of these depilatories are powerful germicides, so that when the hair is removed the superficial epithelium is sterilized completely at the same time, and the whole preparation of the skin at the site of a prospective operation can be done in five or six minutes. I experimented at first upon a series of rabbits, using a number of the sulphide depilatories and not making further preparation of the skin. Primary union was obtained in practically all of the incisions. I then gradually extended the experiments to patients in cases in which not much harm would follow if we did not have complete sterilization, and in these cases also the depilatories seemed to be thoroughly effective in making an aseptic field for operation. The two depilatories that I found best are a powder known as foral and a gelatinous semi-fluid called sulphur starch. The first is mixed with water and is spread over the surface from which the hair is to be removed, and the second is applied directly; the foral acts a little more quickly than the sulphur starch, but the latter has some advantage in being immediately ready for use and is somewhat less expensive. I had both of these preparations analyzed. The foral was reported to consist of sulphides of calcium and of zinc, of oxides of calcium and of zinc and to contain some starchy powder. The sulphur starch was reported to consist of sulphides of half a dozen metals embodied in a semi-fluid vehicle. Some of the depilatories with which I experimented were inert and some injurious to the skin, but these two seemed to be harmless, and the hair grows out at once afterward, as after ordinary shaving.

The simplest method, then, for preparation of my own hands I have found to be the employment of a nascent chlorine method, and the simplest preparation for the skin of the patient, the use of one of the sulphide depilatories. Experi-

ments along this line are to be carefully conducted, but the method promises to be the simplest and most convenient for both surgeon and patient. Robert T. Morris, M. D., New York, in *St. Louis Med. and Surg. Journal.*

THEORY AND PRACTICE OF SPINAL COCAINIZATION.

G. K. Dickinson, Jersey City, studies somewhat in detail the anatomy, physiology and practical application of this method of analgesia. Pure cocaine is safe in proper doses, and can be relied upon to have a uniform effect. The local effect begins at once and reaches its full intensity in a few minutes. This effect is the sole one until such time as the salt enters the circulation by the veins and produces its secondary systemic effect. The local effect is in from three to five minutes to produce a complete analgesia of the superficial nerve of that part of the body below the point of puncture. In five minutes more the deeper nerves are affected in the same way. As the primary analgesia extends upward it becomes surgically more uncertain, and though sometimes complete, cannot be counted upon. After twenty minutes have expired from the time of puncture systemic results may be expected. Being in the dose ordinarily used, one-half grain, a vasomotor stimulant, the skin blanches, the cerebrum becomes anemic, and vomiting results. The analgesia is progressive and at times irregular in primary manifestation, showing first in the pudencal region, at other times in the feet. Areas of analgesia coalesce until the complete effect is produced. Sometimes respiration is accelerated, but not sufficient to be noticed by the patient as a distress. The heat center is affected and by increased metabolism the temperature may rise from 1° to 5°. A fairly constant effect is a severe pain in the back and thigh, which comes on soon after the analgesic effect has worn off and persists for several hours. Before making the puncture, the skin of the back and loin should be prepared as carefully as before an abdominal operation, so that free manipulation of the back and a proper search for the spinous processes may be made. The spinous process is the guide, and if it is not rightly estimated as to its size or position of its lowermost point, the point of entrance will not be correctly located. The patient should sit well bowed forward with the bend at the lumbar region, and with the forefinger of the left hand supported by

the thumb pressed against its pulp, push the nail of the forefinger repeatedly up and under the spine to be located. By doing this, the parts are pressed in and the undermost part of the spine found. Finding the lower limit of the spine selected, generally the third, take a point a little less than a quarter of an inch below and a half inch to the right for the point of entrance of the needle. The skin can be frozen with a spray of ethyl-chloride and a puncture made with a bistoury; the point of the needle is directed a little upward and toward the ligamentum subflavum. The most concern must be felt from the condition known as idiosyncrasy. Surgical analgesia of the lower limbs will be attained in three minutes in the great majority of cases, but for operations on the upper trunk or head, at least thirty minutes must elapse.—*N. Y. Med. Rec.*

METHODS OF CLOSING THE ABDOMINAL INCISION.

W. D. Haggard, Nashville, arrives at these conclusions:

The most reliable statistics prior to 1894 show that hernia occurs in from 6 p. c. to 29 p. c. of abdominal sections.

Suppurating abdominal wounds result in from 31 p. c. to 68 p. c. of hernia (according to the method of suturing).

The frequency of hernia is increased with the thickness of the parietal wall.

The longer the incision, the greater is the likelihood of hernia.

Drainage openings predispose to its production.

The site of the incision does not materially add to the occurrence, if suturing is uniform.

Abdominal supporters have absolutely nothing to do with the prophylaxis of this condition.

Subsequent pregnancy does not influence its occurrence.

The best preventive of postoperative hernia is the aseptic healing of the wound.

Through-and-through suture is satisfactory in thin subjects with short incisions, and is recommended when rapid closure is imperative.

The best method of suture is one which insures accurate coaptation of the fascia.

The method of closure in three layers by continuous silk wormgut in peritoneum fascia and subcutaneously seems

to be freer from objections than any other. Its extended trial is desirable.

The patient should be confined to bed from two and one-half to three weeks to insure thorough organization and consolidation.

After a wound is completely healed no other influence acts deleteriously upon the permanence and resistance of the citatrix.

It is believed that less than 2 p. c. of abdominal incisions should become infected, and not over 3 p. c. of hernias should result.—*Am. Med.*—*St. Louis Med. Rev.*

Jottings.

THE USE of Gelsemium is indicated in colds, with copious, thin discharge from the nose, watery, inflamed eyes, soreness of throat, hoarseness and pain in forehead.

Grindelia Robusta is one of our most efficient remedies in spasmodic asthma and asthmatic coughs.

In Deafness put four or five drops of mullein oil in affected ear, provided the cause is not from destruction of ear drum.

Dr. Bartholow states that the loss of voice from fatigue or simple laryngitis is relieved by small doses of nitric acid, well diluted and given every two hours.

In the use of Hot Water as an injection in chronic uterine diseases, always be sure that the water is hot, not warm.

Persistent Vomiting is in most cases promptly relieved by a few small doses of calomel, one-tenth to one-twelfth grain every fifteen minutes.

Equal parts Oil of Peppermint and Dark Pinus Can is excellent for burns and scalds, removing the pain directly.

The frequent application of Oil of Eucalyptus, with a camel's hair brush, gives speedy relief of pain in chilblains, and soon effects a cure.

The Compound Tincture of Benzoin is an admirable remedy for chapped hands, lips, cracked nipples and all frosted conditions, etc.

In the Headache of Migraine, one grain of the citrate of caffeine given every hour will often produce most marked relief.

Strychnia is an excellent remedy for uterine hemorrhage from atonicity or inertia. It may be given in advance if such a condition is anticipated.

Jaborandi, in doses of from five to ten minims, favours general relaxation and overcomes rigid os uteri.

Zinc Sulphocarbolate, grain one-half, will check vomiting with surprising rapidity.

The Fluid Extract of Ustilago Maydis, one-half drachm, cured a case of hiccough that had resisted all other treatment for days.

An Ointment made of Yellow Oxide of mercury, two grains to one ounce of vaseline, applied lightly once a day, cures granulated lids.

Cocoa-butter Suppositories, containing ten to eighteen grains of iodoform, is excellent for fistula in anus and painful piles.

One-half Grain of Chloral Hydrate, given every three hours, is valuable in nettle rash.

It is Stated that Strong Coffee, hot, will quickly overcome uterine inertia, if drank freely.

Collinsonia has been long advised as a specific in the laryngitis known as "ministers' sore throat.",

Incontinence of Urine in children can be relieved by specific collinsonia.

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Editorial.

SCHOOL CHILDREN AND DISEASES OF THE EYE AND EAR.

Some time ago the Illinois State Board of Health deemed it essential that some action be taken to protect the sight and hearing of the children attending the various schools in the State. The Board made a systematic examination of the scholars attending the Chicago schools with the result that it found that thirty-two per cent. of the boys and thirty-seven per cent. of the girls had defective vision. The Board, therefore, recommended that the eye and ear of every pupil be examined once a year by the school teachers. The examination recommended is practical and simple in manner, and is very easily carried out in about five minutes of time. The teacher asks ten questions, and, although unable to specify the character of the child's affection, is able to discover that a defect exists. The remainder of the investigation must be entrusted to a physician. The parents are then notified by a card of warning,

stating that an eye or ear defect is believed to exist, and they are earnestly requested that the matter be attended to, as it retards school progress and militates against the well-being of the child. Action by the parent is not compulsory, but parents are not likely to disregard this advice, and they are at liberty to consult any physician they desire. The following is the plan of examination recommended, and it seems one which is very likely to attain the object in view:

PLAN OF EXAMINATION.

The State Board of Health begs to append herewith a brief description of the method by which the tests may be satisfactorily performed.

The necessary material simply consists in the testing charts, which may be inexpensively obtained of dealers in optical supplies, and the warning cards for parents, which will be later described, and which should be printed in your own city.

The testing charts are made of thick cardboard, partially broken at about the lower third. Above the partially broken line are printed various letters of different sizes, which should be seen by a normal eye, at certain stated distances. For instance, the large, top letter should be seen at 200 feet, the line marked 50, at 50 feet, the line marked 20, at 20 feet, etc. The line marked 20 is the one usually employed in testing eyes, therefore during the test the pupil should sit 20 feet from the card.

The teacher should completely break the card at the partially broken line, the upper part should be hung on the wall during the tests; the lower part contains the teacher's instructions for testing, etc., which are as follows:

"Do not expose the card except when in use, as familiarity with its face leads children to learn the letters 'by heart.'"

First grade children need not be examined.

The examination should be made privately and singly in a room apart from the general school session.

Children already wearing glasses should be treated with such glasses properly adjusted on the face.

Ascertain if the pupil habitually suffers from inflamed lids or eyes.

Place the testing card on the wall in a good light; do not allow the face of the card to be covered with glass.

The line marked xx (20) should be seen at 20 feet, therefore place the pupil twenty feet from the card.

Each eye should be examined separately.

Hold a card over one eye while the other is being examined. Do not press upon the covered eye, as the pressure might induce an incorrect examination.

Have the pupil begin at the top of the test card and read aloud as far as he can, first with one eye and then with the other.

If the pupil does not habitually suffer from inflamed lids or eyes, or can read a *majority* of the xx (20) test type with each eye, and does not, upon inquiry, complain of *habitually* tired painful eyes and headache after study, his eyes may be considered satisfactory. But, if he habitually suffers from inflamed lids or eyes or cannot read a *majority* of the xx (20) test type with both eyes, or habitually complains of tired or painful eyes or headache after study, a card of information should be sent to the parent or guardian.

FACTS TO BE ASCERTAINED.

1. Does the pupil habitually suffer from inflamed lids or eyes?

2. Does the pupil fail to read a majority of the letters in the number xx (20) line of the Snellen's Test Types, with either eye?

3. Do the eyes and head habitually grow weary and painful after study?

4. Is the pupil probably "cross-eyed?"

5. Does the pupil complain of earache in either ear?

6. Does matter (pus) or a foul odor proceed from either ear?

7. Does the pupil fail to hear an ordinary voice at twenty feet in a quiet room?

8. Does the pupil fail to hear the tick of a good-sized watch at three feet with either ear in a quiet room?

9. Does the pupil fail to breathe properly through either nostril?

10. Is the pupil an habitual "mouth-breather?"

If an affirmative answer is found to *any* of these questions, the pupil should be given a card or letter of warning to be handed to the parent, which should read something like this: —

Dear Sir:

After due consideration it is believed that your child has some Eye-Ear disease, for which your family physician or a physician who makes a specialty of diseases of the eye or ear should be consulted.

It is earnestly requested that this matter be not neglected, as children with Eye-Ear diseases cannot attain the best results in school.

Respectfully,

.....

Principal.....School.

Either the word "Eye" or "Ear" may here be crossed out as may be appropriate for the case. If the pupil has presumably both an Eye and Ear disease, *both* words may be left and the space between the words "Eye" and "Ear" should be filled in with the word "and."

It will be observed that these cards are non-obligatory in their nature. They do not require anything of the parent, who is at perfect liberty to take notice of the warning card or not, as he sees fit. They simply warn the parent that a probable Eye or Ear disease exists, thus placing the responsibility upon the parent.

The "Facts to be Ascertained" have been so worded that an affirmative answer to any of them will indicate that the pupil needs a warning card to take to the parent.

One important matter should be remembered in these tests, viz.: They are not conducted solely for the purpose of detecting ocular conditions *requiring the use of glasses.* Many seem to have the idea that they simply detect errors of refraction, but such is not the case, as they will, if properly carried out, detect the existence of almost all serious ocular diseases. Of course, the teacher does not know what disease may be found under an oculist's examination, but she will know that *something is wrong*, which is sufficient. The sole idea of the tests is to separate those children having good eyes and ears from those having defective eyes and ears. Those passing the tests successfully are returned to school and not re-examined for one year, when they should undergo another examination, as morbid conditions may have developed meanwhile. Those having defective eyes and ears are simply given a card of warning which they hand to the parent. This card merely states that some eye or ear disease is believed to exist, and the consulting of a physician, therefore, is advised. The matter is not compulsory, as the parent may do as he thinks best; he may consult any physician or dispensary he chooses. In this way the duty is thrown upon the shoulders of the parent, where it belongs, but, if compliance with the advice is observed, the teacher may from time to time urge the matter with tact and delicacy, but nothing should be said to make parents regard the request as an arbitrary command.

It is urged that records of the tests should be kept on file in the various schools and that the tests should be made of *all pupils every October.*

Book Review.

Regional Minor Surgery.—By George Gray Van Schaeck, M.D., attending surgeon to the French Hospital, New York. Published by the International Journal of Surgery Company, Medical publishers, 100 William street, New York.

This is a convenient little book and deals in a concise and practical way with a subject of prime importance to the general practitioner. The author advises conservative methods and clearly indicates the importance of carrying out little details. It is important to secure primary union and the smallest possible scar on the face. It is also wise to patch up and save crushed fingers. The whole teaching of the little book would indicate that the author was a prudent surgeon, who had a right to speak from experience.

F. R. E.

SANMETTO IN ENLARGED PROSTATE, WITH SUPPRESSION OF URINE AND CHRONIC INFLAMMATION OF BLADDER.

I have used Sanmetto in enlargement of the prostate suppression of urine and chronic inflammation of the bladder, and can recommend its use for any and all of the troubles of the urinary tract.

J. A. WILSON, M.D.

Columbus, O.

SANMETTO IN PROSTATITIS, URETHRITIS, CYSTITIS.

I have used Sanmetto extensively in my practice for some years, and in well chosen cases have always gotten good results. I look upon it as a most valuable remedy in prostatitis, urethritis, cystitis, and, in fact, all inflammatory conditions of the genito-urinary tract.

W. J. CHITTOCK, M.D.

Jackson, Mich.

SANMETTO IN URINARY IRRITABILITY IN THE AGED OF BOTH SEXES, IN ENURESIS IN CHILDREN, AND IN SEXUAL ATONY, ESPECIALLY THE SEXUAL AVERSION AMONG WOMEN WITH MAMMARY NON-DEVELOPMENT.

I have used Sanmetto extensively in my practice, and am now prescribing it two or three times daily, and have to meet with the first disappointment in well chosen cases. I use it with feelings of assurance in urinary irritability in the aged of both sexes ; in enuresis in children ; and in sexual atony, especially the sexual aversion among women with mammary non-development or mammary atrophy, because of nursing. Its action seems to be very remarkable upon the glands of the genito-urinary tract. Many cases of immature organs rapidly develop under its use, and the atonic condition of abused organs relieved. I like Sanmetto and shall continue its use where indicated.

JOHN D. NORTH, M.D.

Jackson, Mich.

NOTICE.

The attention of our readers is called to the advertisement of the Lacto-Globulin Co., of Montreal, who are placing on the market a new proteid food which appears to be a decided improvement on the foods now before the Profession. This food contains 83 per cent. of proteid matter and 4.76 per cent. of phosphates of calcium, sodium, potassium, etc., which it is claimed are converted by the process into glycero-phosphates. The principal scientific achievement claimed by the manufacturers is that the process preserves in concentrated form the natural digestive blood-enxymes of fresh milk. The process was discovered by two medical men in Montreal, who have been devoting the last ten years to this subject, and the preparation is being placed in the hands of the professsion solely, as an adjuvant food in all cases of malnutrition, indigestion, wasting diseases, etc. Its value has already been practically demonstrated in a series of clinical tests, and the food will fill a long-felt want if it fulfils the claims made for it.

The manufacturers will offer every opportunity to medical men to test this food by sending samples as required.